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UNDERSTANDING THE CURRENT GAZE OF WORKPLACE WELLBEING IN OFFSITE MANUFACTURING

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The controlled offsite manufacturing environment provides an opportunity for understanding the relationship between workplace wellbeing and the nature of conditions that shape potential for workers to improve gains through working conditions and productivity respectively. The new factory-based workplace environment brings with it new challenges in wellbeing to health and to safety. Coupled with this, there is no empirical evidence to support the numerous claims that wellbeing for people working in offsite manufacturing factories is much improved because of the controls that are implicit. The concept of workplace wellbeing, those associated with human and social capital, is developed and situated in the existing offsite manufacturing literature using a desktop study technique. Emergent findings from the literature review suggest that a contextually based conceptual framework requires workplace wellbeing to be addressed through a sociocultural analytic lens from a humanist perspective to tease out the phenomenon from the viewpoint of the worker. There is a tendency to focus on offsite manufacturing through the lens of the economic rationalist which espouses efficiency over time, materiality and innovation over people. While humanist values such as human and social capital have been identified as some of the key mediators for wellbeing-based productivity, a review revealed a lack of published research into the context specific factors affecting workplace wellbeing in offsite manufacturing in Australia.

Keywords: workplace wellbeing, offsite manufacturing, human capital, social capital.

INTRODUCTION

The concept of learning from failures is fundamental to the practice of construction. Developments in production processes give way to incremental change in the Australian construction field through innovation and efficiencies, by moving elements of process from onsite construction to offsite manufacturing (OsM) (Goulding et al., 2013). A unified field of practice between onsite construction and offsite manufacturing, where both systems affect the other, amplifies the capacity to perform environmental, social and economic change in the sector. The aim is to have extended reach for prefabrication (Steinhardt et al., 2014) whilst enabling production based improvement strategies for construction. From the blurred diffusion between the two delivery systems, does OsM forge its own identity towards potential or does the industry remain intertwined with and considered an extension of traditional construction? For Blismas et al. (2006) the fundamental regard for healthier and safer work conditions are one of the more significant benefits of prefabrication. However, does the absence of site based risks in OsM, provide a workplace wellbeing environment for employees or are other factors involved?

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The term wellbeing represents a sociocultural construction of a personal development phenomenon - that is, wellbeing is a self-actualised journey to potential and virtue, whether it's happiness or having a 'good life' and expressed as emotion (Erdogan et al., 2012). Wellbeing is context free and actively pursued. Nussbaum (1999) extended the definition of wellbeing to include entering empathically into the lives of others where the agency of the individual is to find meaning as a '*primary motivational force'* (Frankl, 1985) as well as reacting to the dynamics of contextual forces (Sang et al., 2007). This effect places the OsM employee as an active participant in the dynamic system of the workplace wellbeing process. This paper explores what consideration has been made towards workplace wellbeing in OsM literature.

CONTEXT

Offsite Manufacturing (OsM)

OsM is seen as an intrinsic collaborator of the construction industry providing a manufacturing base for processes and preassembly of parts, a quality-controlled product (Goulding et al., 2014) and environment. At the intersection of OsM and onsite construction is a language shared across both platforms. The language used by designers, engineers, and by skilled and unskilled workers in both sectors, acts synergistically with other social elements to function as a system of cultural values and norms.

Research over the last 20 years with a spike in the last 5 years in Australia regarding the health and wellbeing of male construction workers, points to unacceptable levels of work related deaths both deliberate (Milner et al., 2017) and accidental (Milner et al., 2015). Risk factors include but are not limited to: the prevalence of unsafe working conditions (Godfrey et al., 2007) and a range of entrenched negative occupational behaviours that place these risk factors into an escalated state of play. Player et al. (2015) described occupational behaviours as 'unhelpful conceptions of masculinity consisting of stoic beliefs' where adversarial culture, was found to be endemic in what is predominantly a male workforce (Turner et al., 2017; ABS, 2016). Whereas Dainty et al. (2007) posit that the diversity of people employed on different contractual basis, thrust together under short term project conditions does not favour effective working relationships to develop.

Project based terms of employment may create personal stressors for employees and contractors. Overwork (Green, 1999), low decision latitude (Turner et al., 2017), bullying and stoicism (Milner et al., 2017) and a combination of external issues such as macroeconomic push pull factors where a boom in one area causes shortages of builders and supply in another (Mbiti et al., 2011), impede on job security, safety and workplace wellbeing. Environmental factors contributing to the unwell-being of workers and by default affects productivity, are influences which are bound to organisational clarity and communication of objectives to the workers. Operational unpredictability has a flow on effect. When job insecurity that temporary project-based work provides for the long term basic needs of employees (Hardie, 2010), or a lack of organisational clarity (Warr, 1994) results in instability.

The aim of this paper was to generate the position, that to investigate the effect of working in the OsM environment on the workers wellbeing, a deeper understanding of systemic conditions is required. Presented below is a critical discussion on the working definition of workplace wellbeing.

Workplace Wellbeing

Two schools of thought exist when it comes to defining context-based wellbeing or, in the case of this research, workplace wellbeing. The first is that a litany of definitions focus on context-

based workplace wellbeing as job satisfaction (DeWitte et al., 2016). The workplace environment plays a mediating role in shaping the actualisation of a worker's wellbeing. Where organisational outcome is productivity engineered through a sense of purpose, belonging, agency and providing a backdrop for sociocultural narrative of meaning and understanding (Carmichael et al., 2016). It is within a person's nature to invest work with meaning. This provides a platform for the rationalisation of what represents a good work environment to the individual whilst remaining relative to the individual's attitude and choice (Frankl, 1985), and bound to the social context (Ma et al., 2016).

The second school of thought regards job satisfaction or a person's attitude towards their work environment as an experiential *evaluation.* This being the case, value judgements are made concerning their job, cognisant of their affective experience of the job as a consideration made relative to time (Weiss, 2002). According to Visser et al. (2004), attitudes that are formed, held and maintained at work are embedded within a homogenous social network. Attitudes formed within homogenous social networks such as with co-workers, are dependent on the makeup of the group such as positivity and support, or negative with adverse behaviour (Uchino et al., 2004). However, the same set of conditions in the OsM environment may be experienced as enabling or oppressive to a person whilst enjoyable and satisfying for another. It is within context that judgements are made, and environmental attitudes are formed and maintained (Weiss et al., 1996).

Although both conceptual views of job satisfaction have acquired the psychological construct of "attitude", the point at which divergence occurs, is that affect, and evaluation are separate constructs (Weiss, 2002). With the understanding that workplace wellbeing is self-actualised and activated in response to the relationship between a person their job, other members of the workplace and the organisational environment over time, identifying the concepts that provide an understanding of the workplace wellbeing phenomenon in OsM is necessary (Jabareen, 2009). From literature in multidisciplinary bodies of knowledge situated in the fields of psychology, social sciences and construction management, the following concepts of human and social capital within the context of the workplace environment emerged as having either positive or negative affect over workplace wellbeing and productivity.

FROM CONTEXT TO CONCEPTUAL

Firstly, human capital or the skills, knowledge and personal attributes that employees bring to an environment, contribute to evaluating the participants' perspective of the lived experience (Sandberg, 2007; Weiss, 2002). How does an employee's skills support workplace wellbeing? If finding meaning is achieved through finding purpose, then employment would satisfy those needs. How can it be achieved and what stands in the way? The answer may be found in using job satisfaction as a mediating factor and as a constituent of self-actualisation and the eternal search for meaning which is formed over time as an attitude rather than as an affect ((Frankl, 1985; Weiss et al., 1996).

The common thread between higher implementation rates of OsM in developed countries, such as Sweden, Finland, Japan (Steinhardt et al., 2013) and Germany (Lovell, 2003) is the use of specifically multi-skilled workforce. This is where people working on the production line possess a range of skills applicable for more than one type of process, which is also found in lean production (Womack et al., 1990). This lies in contrast to Australia, the UK and US where the frequency of OsM application is by comparison slow and erratic (Arif et al., 2012). People on the production line (other than supervisors) are hired with no specific trade-based qualifications pertaining to construction or manufacturing.

There are instances where unskilled labour is deemed as a cost saving consideration for OsM

implementation (Arif et al., 2010), whereby people trained experientially in a manufacturing setting, learn skills without the accumulated effect of bad habits being perpetuated (Blismas et al., 2007). For professionals such as designers and supervisors in the field of construction who require professional development, experiential training in a virtual prototype (VP) setting has been suggested to provide targeted learning in the OsM industry before implementation (Goulding et al., 2014). Professional skill sets are tacit and exploited through mobilisation whereas an unskilled person, requires the ability to create agency through participation in the community of practice (Duguid, 2005). Agency comes in opposition to deploying skilled labour. However, what has not been defined are the type of skills, knowledge or systems required for learning to occur to yield a more productive outcome.

For productivity to occur in an organisational setting, a systemic strategy for knowledge retention and consistency within the workforce is required. It follows that what a member of the workforce contributes to their community of practice as social capital which is in the form of value forged through relationships of trust, becomes invested into the system of practice (Coleman, 1988). Building community capacity is an effective force for positive change.

Researchers in the field of construction are divided on the notion of whether the manufacturing process particularly lean construction are one sided in favour of the community of practice or the organisation. Green (1999) plunges his pen into the argument with fervour, inciting followers to think in favour of the individual whereas the rationalist sees the system as a re-engineered process producing environmental and project management-based efficiencies. Navigating Green (1999) requires embracing collaborative culture and social capital or 'social networks', as a subjective predictor of social wellbeing within the system dynamic (Bourdieu 1986).

Understanding of social capital comes with acknowledging that experience is shaped by what Lev Vygotsky (1931) termed as the sociocultural theory of cognitive processes, where the development of knowledge is fluid. It is developed alongside and precedes experience (historical), social and situational contexts where outcomes learnt are through interaction and behaviour (Lantolf, 2006). Fluidity, of knowledge and culture has elements of transferability between contexts.

Construction workers whether they are offsite or onsite, share a habitus in which agency and structure is realised through cultural appropriation. That is, skilled and unskilled workers in OsM, may share a working history and culture on construction sites (Blismas et al., 2007) with language and behaviour used to mediate the conventions of the sociocultural artefacts. Whether it's in the form of language (Lantolf, 2006), behaviours, strictures or skills of construction, these may be brought to the offsite environment. It is within the context of the environment and systemic support for the innovation worker, that the difference resides.

Social involvement in a community or organisation, is embraced through a collaborative culture where according to Hofstede (1993) culture is a collective phenomenon and social capital or 'social networks' (Bourdieu, 1986) are a subjective predictor of social wellbeing within the system dynamic. These tangible benefits of shared understanding, become rendered as implicit in the costing of OsM and omitted in research (Blismas et al., 2005).

DISCUSSION

Does the rationalist perspective of OsM adequately address workplace wellbeing?

The lens of investigation from academia and industry has been at a macro level where context-based approaches for the construction industry explores aspects of OsM through a rationalist lens. These identify overarching economic systems benefits and barriers of cost, time and

quality (Goulding et al., 2013), whilst conducting implicit evaluations on the workplace for the welfare of employees. The beneficiaries of these workplace benefits are skewed towards the flow on effect from OsM to the onsite construction workforce rather than the realised benefits for the offsite worker (Arif et al., 2010). Blismas et al. (2006), posited that welfare benefits have predominantly been marginalised as ad hoc values by industry whilst Sunding et al. (2015) posit that in order to inform performance and productivity gains in construction management, the dialogue regarding the OsM workforce requires an internal audit.

Identification of the predominant benefits for workers in OsM are situated within health and safety. These benefits are attributed to environmental factors where adverse working conditions and physical relocation from the external work site to one that is housed inside a factory, buffers environmental hazards and safety issues (McKay et al., 2005) whilst Arif et al. (2010) concentrated on the effect for onsite workers benefits. These factors, imply that the directional shift from onsite construction to OsM will positively affect the workplace wellbeing of workers in terms of safety, productivity and performance (Abbott et al., 2015). However, McKay et al. (2005) found that the offsite production-based industry whose purpose was to merely put a roof over the construction process, lacked in the productivity gains that technology could bring.

In larger markets such as the UK, Sweden, Germany, and malaysia, where OsM is established, research and government policies have integrated demand for increased output for social housing, with strategies of OsM adoption. Understanding the complexity of a phenomena such as OsM through a systems lens which Groák et al. (1986) termed the 'economic/technical framework' has predominantly been approached from a macroeconomic level. OsM which currently is at a nascent phase of development in Australia, has lacked practice-based operational maturity to evaluate how OsM workplace conditions, translates into workplace wellbeing or job satisfaction. Between the context being conceptualised at the macro level, Schweber et al. (2010) makes the case that the minutiae of detail at the micro level is left in shadow. It is at the micro context-based level, according to Phua (2013), where the individual level of analysis occurs, that OsM research lacks the sociocultural balance. It is not yet clear what systemic factors affect OsM within the organisational setting of Australian construction and how working in OsM shapes the employee's experience of wellbeing.

To date, only a limited number of studies have addressed how the agency of the OsM workers, informs and affects the wider cultural discourse of workplace wellbeing. Academic discourse has taken two approaches to define OsM. One that focusses on the rationalist engineering production orientation reflecting logical sense making of the engineer's world under the various guises of prefabrication, pre-assembly and modularisation. The second explores OsM as a sociocultural phenomenon. The way in which ideas and concepts are communicated in the OsM literature falls within the first of the two contextual frameworks: Functionality and rationality versus social meaning and cultural immersion. The former, misplaces the directional pull of productivity.

The primary operationalisation occurs with economic rationalism at the macro level rather than one that incorporates nurturing of the elevated expectations of OsM through a human based lens; one suggested by Goulding et al. (2013) that incorporates the needs of construction workers as an 'interrelated discipline', at the micro level. The macro level defines the principle of investigation at conceptual or development phase, whereas the micro level lends itself to the operational phase of development.

The connection between a sociocultural phenomenon and societal values can be illustrated with Dutch cultural values. These are characterised by socialistic and egalitarian notions of inclusion, adaptation and individualism (Hofstede, 2001) and expressed through bilateral

creativity as individuals and as a society (Rinne et al., 2013). Individualism promotes creativity through flexible and sustainable practices which carry consideration for their production. Where workers are the actors and drivers of change based performance productivity, this shift of focus towards individuals, provides a platform for fundamental improvements for the workplace wellbeing in OsM.

Optimism towards OsM in the salient literature lists amongst reasons why the construction industry sees a directional shift towards prefabrication, is for efficiency gains in construction where delays have been marked by continuous deficiencies in quality, time and therefore cost (Sunding et al., 2015). Prolonged construction times, difficult site conditions (Dubois et al., 2002), and material waste from defects are easier to stomach than the statistics associated with the unwell-being of its workforce.

The authors argue that it is difficult to determine whether remarks voiced by Pan and Goodier (2012) on improved conditions applies to workers in OsM or acts as a flow on effect for onsite construction workers using prefabricated elements? The literature also suggests that even though human endeavours are the focus, the language of the literature omits this reflection and does not tease out what these benefits are in the workplace.

CONCLUSION

This paper highlights two gaps in knowledge: firstly, there is little research based on the social, cultural and physical characteristics inherent in the OsM environment to examine what variables from the perspective of people working in OsM, have a bearing on their workplace wellbeing and performance. Secondly, there is a lack of knowledge on the cultural and structure of agency of the innovation workforce in the OsM workplace environment and the contextual mediating factors contributing to their workplace wellbeing in Australia as the elements haven't been teased out.

One of the significant outcomes of this study is that it highlights a pathway for future research in Australia, where until empirical research investigates the experiential realities in practice through the lens of the OsM working population, evidence supporting the argument that wellbeing in this environment has beneficial outcomes dissimilar to that of onsite construction, remains implicit and cannot lead to improvements in workplace wellbeing or productivity. Will the OsM workplace environment be any different from onsite or is there a relocation of these inconvenient truths for workers?

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